



Broad Agency Announcement

Instant Foundry Adaptive through Bits (iFAB)

Tactical Technology Office

DARPA-BAA-11-20

18 October 2010

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Part I: Overview Information

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Tactical Technology Office (TTO)
- **Funding Opportunity Title** – Instant Foundry Adaptive through Bits (iFAB)
- **Announcement Type** – Initial Announcement
- **Funding Opportunity Number** – Broad Agency Announcement (BAA) 11-20
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – Not Applicable
- **Dates**
 - Posting Date: October 18, 2010
 - Deadline for Questions: October 27, 2010
 - Proposal Due Date: December 17, 2010
- **Total amount of money to be awarded** – \$17.7 million
- **Anticipated individual awards** – Multiple awards are anticipated
- **Types of instruments that may be awarded** – Procurement Contract or Other Transaction
- **Agency contact**
 - Point of Contact
The BAA Coordinator for this effort can be reached at, fax: +1-703-248-1861, electronic mail: DARPA-BAA-11-20@darpa.mil. Or by mail:
DARPA/TTO
Attn: BAA 11-20
3701 North Fairfax Drive
Arlington, VA 22203-1714

Part II: Full Text of Announcement

I. FUNDING OPPORTUNITY DESCRIPTION

The Defense Advanced Research Projects Agency often selects its research efforts through the Broad Agency Announcement (BAA) process. The BAA will appear first on the FedBizOpps website, <http://www.fbo.gov>. The following information is for those wishing to respond to the BAA.

Background

DARPA previously released the META¹ and META-II² solicitations to develop model-based methods for the design, representation, and formal verification of complex military systems such as ground vehicles, airplanes, and rotorcraft in a “fab-less” environment. The present BAA looks to lay the groundwork for the development of a foundry-style manufacturing capability—taking as input a verified system design specified in an appropriate metalanguage—capable of rapid reconfiguration to accommodate a wide range of design variability and specifically targeted at the fabrication of military ground vehicles.

The principal objective of iFAB—along with META and META-II—is to enable substantial compression of the time required to go from idea to product through a shift in the product value chain for defense systems from “little m” manufacturing (i.e., fabrication) to the other elements of “big M” Manufacturing (i.e., design, customization, after-market support, etc.). Such a shift requires significant de-coupling of production from the other phases and facets of “big M” Manufacturing so as to enable its commoditization. One might term this the “foundry-style” model of manufacturing. This model is an anathema to the current defense industry trend of tightly coupling design and prototyping through multiple design-build-test-redesign iterations. In fact, the iFAB vision is to move away from wrapping a capital-intensive manufacturing facility around a single defense product, and toward the creation of a flexible, programmable, potentially distributed production capability capable of accommodating a wide range of systems and system variants with extremely rapid reconfiguration timescales.

The animating observation is that the advent of a foundry-style design and manufacturing process in the integrated circuit industry has led to tremendous opportunities for innovation in which the U.S. has retained the leading role in spite of the shift of much silicon fabrication capacity to off-shore foundries. This total disaggregation of the vertically-integrated chip-maker model was largely enabled by the VLSI (Very-Large-Scale Integration) revolution that began with the introduction of high-level-of-abstraction design principles of Mead & Conway in 1979, followed, in short order, by DARPA’s VLSI research program which began in 1980.

¹ <https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-10-21/listing.html>

² <https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-10-59/listing.html>

A superficially-analogous disaggregation of the value chain in defense manufacturing can be observed among most of the principal aerospace and defense prime contractors in their divestiture of tier-one and lower manufacturing capability. It has, however, been accompanied by neither a comparable increase in innovation, nor exponential growth in product capability, nor decrease in product development timelines. On the contrary, the defense industry has worsened in its performance in each of these areas, arguably because it has never put in place the technological enablers of a truly disaggregated value chain, thereby confining many major defense and aerospace firms to the “purgatory” between the two models.

The specific goals of the iFAB program are to rapidly design and configure manufacturing capabilities to support the fabrication of a wide array of infantry fighting vehicle models and variants. Parallel efforts titled *vehicleforge.mil*³ and Fast Adaptable Next-Generation Ground Combat Vehicle (FANG) seek to develop the infrastructure for and conduct a series of design challenges intended to precipitate open source design for a next-generation infantry fighting vehicle for the U.S. Army. The iFAB end vision—to be developed in the second phase of the program which will be solicited under a separate BAA at the conclusion of the present effort—is that of a facility which can fabricate and assemble the winning FANG designs, verified and supplied in a comprehensive metalanguage representation with META/META-II tools.

It is anticipated that the iFAB capability is likely to result from the amalgamation of existing fabrication capabilities from a model library that characterizes the salient attributes of each modality of fabrication: cost, speed, range of applicability, speed of reconfigurability, etc. The resultant factory or foundry need not be manifested as a single facility co-resident under one roof. It can be a virtual aggregation of distributed capabilities, sequenced and tied together into a single resultant product flow.

Potential offerors’ attention is also drawn to the related Manufacturing Experiment & OutReach (MENTOR)⁴ solicitation, which is a somewhat analogous effort to iFAB—albeit at a smaller scale—to deploy elements of a distributed computer-numerically-controlled (CNC) manufacturing capability across a number of high schools throughout the U.S. and engage in collaborative design and manufacturing to help develop a future cadre of innovators in this area.

Program Scope & Structure

The iFAB program will consist of two phases. Priced proposals are only sought for the first phase. However, interested offerors are encouraged to submit non-binding rough order of magnitude (ROM) cost estimates for the second phase. The first phase will be 12 months in duration and will address the following three technical areas:

- Foundry (re)configuration tools
- Manufacturing capability and process model library
- Manufacturability constraint feedback to system design

³ <https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-11-20/listing.html>

⁴ <https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-11-20/listing.html>

Offerors may submit proposals to one, several, or all of these technical areas. If an offeror chooses to submit a proposal covering more than one technical area, they are encouraged to include the others as priced options so as to enable DARPA to easily fund a subset of the proposed technical scope. Separate proposals from the same offeror for the different thrust areas will also be accepted.

The second iFAB phase is currently estimated to be 24-36 months in duration and will focus on the development, configuration, and operation of a specific foundry capability for a given ground vehicle domain, as well as demonstration of rapid adaptation to changes in the vehicle design. For reference and planning purposes, a representative family of vehicle designs comparable to the Army's Ground Combat Vehicle (GCV) program⁵ may be assumed as the target product set which the iFAB foundry would need to be able to fabricate. The emphasis will be on rapid and minimum-learning curve adaptation between product designs and variants, not on production rates, speeds, or automation.

In other words, the principal metric for program success will be the speed with which a new manufacturing capability can be stood up in response to a new design or design variation, and secondarily, the speed throughput with which a particular foundry design can yield a finished vehicle product, as well as the quality (in terms of tolerances, defect rates, etc.) of the finished product. Offerors should explicitly articulate the advance that their proposed approach is likely to have with respect to these metrics and substantiate these assertions with analysis or empirical data whenever possible.

Technical Area One: Foundry (re)configuration tools

This technical area addresses the development of a set of configuration tools that enable the initial design and rapid reconfiguration of foundry capability based on an objective system design and possible excursions from that system design. For instance, a foundry could be created by selecting an appropriate set of manufacturing capabilities, machines, and processes around a specific point design for a ground vehicle. A different foundry configuration might be selected, however, if a range of derivative ground vehicle models is anticipated (though each may not be *a priori* known). A very different configuration yet might result if the desired capability is to manufacture both ground vehicles and helicopters. This range of adaptability should be a tunable parameter in foundry configuration. It should be noted that the foundry may be a distributed set of manufacturing capabilities that are not physically co-located. To allow for this possibility, the foundry configuration tools should be able to incorporate a flow-of-goods model that enables the incorporation of logistical latency and uncertainty into the configuration associated with a distributed manufacturing approach.

Apart from supporting the initial configuration of the foundry, the emphasis of this technical area is on rapid reconfiguration to accommodate new designs or design

⁵ <http://contracting.tacom.army.mil/majorsys/gcv/gcv.htm> and <https://www.fbo.gov/notices/3ca68abe44eae4d617512b7057977a18>

changes. Both bitstream-level reconfiguration (i.e., reprogramming of existing manufacturing capability) and physical reconfiguration (including the addition of new capability, e.g., the factory “building itself”) are of interest. The tools developed under this technical area should enable trade-offs between the two types of reconfigurability and should present the foundry designer with a tradespace of options based on a variety of tradable parameters. To support these trades and to measure program performance, offerors should propose specific figures of merit that encompass the degree of adaptability, cost, reconfiguration speed, and fabrication timelines associated with a given foundry design.

In the vision for foundry-style manufacturing, a verified design, suitably represented in a metalanguage and conforming to the facility’s manufacturability constraints, will be passed to the foundry. The design must be translated into usable instructions to enable execution of the manufacturing processes. This necessitates that all elements of the foundry are electronically reachable. This will entail a variety of instruction types such as, but not limited to:

- Machine tool path instructions such as for a CNC machine
- Assembly instructions for a pick-and-place robot
- Assembly instructions for human operators joining major subassemblies
- Part and assembly ordering details for off-the-shelf purchased parts
- Logistics requirements to ensure proper part shipment, storage, and use
- Test instructions for quality assurance purposes

To facilitate execution of a design in multiple configurations, standard and uniform languages would be expected to facilitate communication with foundry equipment. This may involve extending existing languages, creating new languages, and developing translators to interface with existing standard languages. Tools supporting this area should support direct generation of these instructions from the meta-encoded design and foundry configuration in a manner to preserve and confirm the integrity of the verified design.

Technical Area Two: Manufacturing capability and process model library

To support the rapid synthesis of foundries and their reconfiguration, this technical area seeks the development of a library of various fabrication processes and associated “factory components,” i.e., machines and techniques employed to produce the various constituent elements of the objective product. The principal thrust of this technical area is on the characterization of various manufacturing machines, techniques, and processes in terms of their range of applicability, range of reconfigurability, cost, speed, and other relevant characteristics. It should be noted that these characteristics are not simple attributes. In fact, the development of a coherent manufacturing library will necessarily require the creation of a language that enables the uniform representation of various library components and their models, as modeling would be needed to represent the range of applicability of a particular manufacturing machine, its speed with respect to a particular part, or its reconfigurability between two different parts.

In the course of execution of this technical area, the offeror should plan to develop a domain-wide manufacturing library that spans a significant and representative cross-section of the machines, techniques, and processes employed in the course of fabricating a typical armed military ground vehicle with state-of-the-art armor and capable of crew accommodation. The manufacturing library should span the full gamut of electromechanical components, including but not limited to structures, armor, power- and drive-trains, electronics, crew interfaces, etc. Proposals should be explicit in describing the number and range of library elements, as well as the types of attributes, representation languages, and the means for their characterization that will be employed.

Technical Area Three: Manufacturability constraint feedback to system design

In decoupling system design and verification from its fabrication, it is critical to preserve facets of design-for-manufacturability, i.e., to incorporate constraints associated with ease and cost of manufacturing early into the system design process. This technical area seeks to develop a mechanism for the feedback of manufacturability constraints into the design and design tradespace exploration process. Approaches to the problem at two different levels are sought. First, proposers to this technical area will need to work closely with META and META-II PIs to examine their design approaches and tools, and develop methods for rapidly and semi-automatically mapping constraints associated with a particular foundry onto the system design tradespace. (DARPA will facilitate this interchange.) A capability to trade off different manufacturing approaches in terms of their resultant constraints on the cost, performance, complexity, and other design attributes of the product in question is desired. Second, proposers should develop systematic approaches to the synthesis and expression of design rules which may be applied to a variety of different design processes, not just those being developed under the META and META-II efforts.

Deliverables

Offerors should propose an appropriate schedule of reviewable interim milestones, to occur at least bi-monthly. These milestones should have concrete interim deliverables (e.g., code builds, demo runs, draft documentation, etc.) and quantitative metrics associated with them. Offerors are also referred to Section VI.C of this BAA for additional reporting requirements.

All milestone reviews will be conducted in the form of principal investigator (PI) meetings—occurring bi-monthly—at which all performers across the various technical areas, along with performers on other related efforts in the Adaptive Vehicle Make program portfolio, will be present. The PI meetings will be held at Government-furnished facilities in major U.S. or international metropolitan areas with easy access by air. The Government reserves the option to make the PI meetings open events. To facilitate the exchange of information between performers within and across technical areas, selected offerors may be required to implement an associate contractor agreement (ACA) as a condition for contract award. Interim progress will be evaluated through short bi-weekly videoteleconferences (VTCs).

DARPA desires to receive complete, fully functional algorithms, source code, documentation, binaries, and test use cases implementing the capability described above. The final version of these deliverables must be supplied to the Government no later than the end of the base period of performance and any time modifications are made during the option periods. The delivery of interim versions as milestone deliverables is strongly encouraged.

DARPA desires Unlimited Rights to all deliverables under this program except clearly-identified commercial items, with their commercial availability described and substantiated in the proposal. Intellectual property rights will be an explicit proposal review criterion (see Section V) under this BAA and offerors should structure their development accordingly, especially where proprietary technical data or computer software is offered.

Offerors should propose, as part of their work plan, affirmative steps for the open source promulgation of all source code, executables, documentation, and test use cases. The specific open source license will be specified by DARPA in course of the period of performance.

No later than the end of each period of performance, the performer shall deliver a final report in the form of: (1) a technical manuscript of publishable quality and suitable for publication in a journal or conference proceedings documenting their technical progress and results achieved in significant detail, and (2) a programmatic final report containing financial data and other information not suitable for publication but appropriate for program documentation and planning.

DARPA anticipates funding this effort with RDT&E Budget Activity 2 (“6.2”), Applied Research funds enabling academic institutions performing work on campus to participate without pre-publication review restrictions.

This BAA is intentionally structured in the form of multiple independent technical areas to facilitate participation by small and non-traditional performers, as well as academic and other not-for-profit institutions. Offerors may respond to only those technical areas that are within their scope of competency. To further and facilitate the democratization of innovation sought by the Adaptive Vehicle Make program portfolio, **international participation in this solicitation is welcomed.**

II. AWARD INFORMATION

Multiple awards are anticipated. The amount of resources made available under this BAA will depend on the quality of the proposals received and the availability of funds. DARPA tentatively anticipates making up to a total of \$17.7 million available for this first phase of the iFAB effort.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation, and to make awards without discussions with proposers. The Government also reserves the right to conduct discussions if it is later determined to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that proposer. The Government reserves the right to fund proposals in phases with options for continued work at the end of one or more of the phases.

Awards under this BAA will be made to proposers on the basis of the evaluation criteria listed below (see section labeled “Application Review Information”, Sec. V.), and program balance to provide overall value to the Government. Proposals identified for negotiation may result in a procurement contract, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications. The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the proposer fails to timely provide requested additional information.

As of the date of publication of this BAA, DARPA expects that program goals for this BAA may be met by proposers intending to perform 'fundamental research,' i.e., basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization the results of which ordinarily are restricted for proprietary or national security reasons. Notwithstanding this statement of expectation, DARPA is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as 'fundamental research' under the foregoing definition, still meet the BAA criteria for submissions. In all cases, the contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument provisions with selectees.

III. ELIGIBILITY INFORMATION

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. DARPA encourages the participation of small businesses, academia, non-traditional, and international performers in this solicitation.

Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

Federally Funded Research and Development Centers (FFRDCs) and Government entities (Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they address the following conditions. FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector AND must also provide a letter on letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions. This information is required for FFRDCs proposing to be prime or subcontractors. Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority (as well as, where relevant, contractual authority) establishing their ability to propose to Government solicitations. At the present time, DARPA does not consider 15 U.S.C. 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the Proposer.

1. Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest

Current federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 USC 203, 205, and 208.). The DARPA Program Manager for this BAA is Paul Eremenko. Once the proposals have been received, and prior to the start of proposal evaluations, the Government will assess potential conflicts of interest and will promptly notify the proposer if any appear to exist. (Please note the Government assessment does NOT affect, offset, or mitigate the proposer's own duty to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.)

All Proposers and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the Proposer supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the Proposer has

taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval or a waiver from the DARPA Director, a Contractor cannot simultaneously be a SETA and Performer. Proposals that fail to fully disclose potential conflicts of interests and/or do not have plans to mitigate this conflict will be rejected without technical evaluation and withdrawn from further consideration for award.

If a prospective Proposer believes that any conflict of interest exists or may exist (whether organizational or otherwise), the Proposer should promptly raise the issue with DARPA by sending Proposer's contact information and a summary of the potential conflict by email to the mailbox address for this BAA at DARPA-BAA-11-20@darpa.mil, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively mitigated, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

B. Cost Sharing/Matching

Cost sharing is not required for this particular program; however, cost sharing will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., for any Other Transactions under the authority of 10 U.S.C. § 2371). Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

C. Other Eligibility Criteria

1. Collaborative Efforts

DARPA has structured this solicitation as a series of discrete technical areas to facilitate participation by small and non-traditional performers, as well as academic and other not-for-profit institutions. Offerors may choose to respond to only those technical areas that are within their scope of competency. Teaming is not required. International interest and participation are welcome.

IV. APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

This solicitation contains all information required to submit a proposal. No additional forms, kits, or other materials are needed. This notice constitutes the total BAA. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

B. Content and Form of Application Submission

1. Security and Proprietary Issues

NOTE: If proposals are classified, the proposals must indicate the classification level of not only the proposal itself, but also the anticipated award document classification level.

The Government anticipates proposals submitted under this BAA will be unclassified. However, if a proposal is submitted as “Classified National Security Information” as defined by Executive Order 13526 as amended, then the information must be marked and protected as though classified at the appropriate classification level and then submitted to DARPA for a final classification determination.

Proposers choosing to submit a classified proposal from other classified sources must first receive permission from the respective Original Classification Authority in order to use their information in replying to this BAA. Applicable classification guide(s) should also be submitted to ensure the proposal is protected at the appropriate classification level.

Classified submissions shall be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

CLASSIFICATION DETERMINATION PENDING. Protect as though classified (insert the recommended classification level: (e.g., Top Secret, Secret or Confidential)

Classified submissions shall be in accordance with the following guidance:

Confidential and Secret Collateral Information: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another Original Classification Authority. Classified information at the Confidential and Secret level may be mailed via appropriate U.S. Postal Service methods (e.g., (USPS) Registered Mail or USPS Express Mail). All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be address to:

Defense Advanced Research Projects Agency
Attn: TTO
Reference: BAA 11-20
3701 North Fairfax Drive
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security & Intelligence Directorate, Attn: CDR
3701 North Fairfax Drive
Arlington, VA 22203-1714

All Top Secret materials: Top Secret information should be hand carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 571 218-4842 to coordinate arrival and delivery.

Special Access Program (SAP) Information: SAP information must be transmitted via approved methods. Prior to transmitting SAP information, contact the DARPA SAPCO at 703-526-4052 for instructions.

Sensitive Compartmented Information (SCI): SCI must be transmitted via approved methods. Prior to transmitting SCI, contact the DARPA Special Security Office (SSO) at 703-248-7213 for instructions.

Proprietary Data: All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Proposer's responsibility to clearly define to the Government what is considered proprietary data.

Security classification guidance via a DD Form 254, "DoD Contract Security Classification Specification," will not be provided at this time since DARPA is soliciting ideas only. After reviewing the incoming proposals, if a determination is made that the award instrument may result in access to classified information a DD Form 254 will be issued and attached as part of the award.

Proposers must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level they propose. It is the policy of DARPA to treat all proposals as competitive information, and to disclose their contents only for the purpose of evaluation. Proposals will not be returned. The original of each proposal received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided the formal request is received at this office within 5 days after unsuccessful notification.

2. Proposal Information

Proposers are required to submit full proposals by the time and date specified in the BAA in order to be considered during the initial round of selections. DARPA may evaluate proposals received after this date until April 18, 2011.

DARPA will accept unclassified proposals submitted under this BAA by mail or hand-delivery. Proposals must be submitted to:

DARPA/TTO

Attn: DARPA-BAA-11-20
3701 North Fairfax Drive
Arlington, VA 22203-1714

Proposals must be submitted in hard copy, with one signed original and four (4) copies plus two (2) CD-ROMs each containing an electronic copy of the complete proposal as a single PDF file. Each copy must be clearly labeled with DARPA-BAA-11-20, proposer organization, proposal title (short title recommended), and copy X of N.

Facsimile or electronic submissions will not be accepted.

For hand deliveries, the courier should deliver the package to the DARPA Visitor Control Center at the address specified above. The outer package, as well as the cover page of the proposal, must be marked "DARPA-BAA-11-20."

Responses to this BAA will not be returned.

Restrictive notices notwithstanding, proposals may be handled, for administrative purposes only, by a support contractor. This support contractor is prohibited from competition in DARPA technical research and is bound by appropriate nondisclosure requirements. Proposals and proposed abstracts may not be submitted by fax or e-mail; any so sent will be disregarded.

The proposal shall be delivered in a single volume including both technical and cost information. Proposals not meeting the format described in this BAA may not be reviewed.

The proposal shall include the following sections, each starting on a new page (where a "page" is 8-1/2 by 11 inches with type not smaller than 12 point, charts may use 10 point font, margins not smaller than 1 inch, and line spacing not smaller than single-spaced). Fold-outs up to 11 by 17 inches may be used but will be counted as two pages. All submissions must be in English. Individual elements of the proposal shall not exceed the total of the maximum page lengths for each section as shown in braces { } below.

Ensure that each section provides detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA.

Proposals for Technical Area 1 should cover the base period as well as option phases.
Proposals for Technical Area 2 should cover the base period.

Proposal Section 1. Administrative

1.1 Cover Sheet {no page limit}

- BAA number;
- Technical area(s);
- Lead organization submitting proposal;
- Type of business, selected among the following categories:
 - WOMEN-OWNED LARGE BUSINESS,
 - OTHER LARGE BUSINESS,
 - SMALL DISADVANTAGED BUSINESS [identify ethnic group from among the following: Asian-Indian American, Asian-Pacific American, Black American, Hispanic American, Native American, or Other],
 - WOMEN-OWNED SMALL BUSINESS,
 - OTHER SMALL BUSINESS,
 - HBCU,
 - MI,
 - OTHER EDUCATIONAL,
 - OTHER NONPROFIT, OR
 - FOREIGN CONCERN/ENTITY;
- All other team members (if applicable and **including second- and lower-tier subcontractors and independent consultants**) and type of business for each;
- Proposal title;
- Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, and electronic mail;
- Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, and electronic mail;
- Award instrument requested: cost-plus-fixed-fee (CPFF), cost-fee—no fee, cost sharing contract – no fee, or other type of procurement contract (*specify*), or other transaction;
- Place(s) and period(s) of performance;
- Summary of the costs of the proposed research, including total base cost, estimates of base cost in each year of the effort, estimates of itemized options in each year of the effort, and cost sharing if relevant;
- Name, address, and telephone number of the offeror's cognizant Defense Contract Management Agency (DCMA) administration office (*if known*);
- Name, address, and telephone number of the offeror's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);
- Date proposal was prepared;
- DUNS number;
- TIN number;

- Cage Code;
- Proposal validity period (minimum 180 days).

1.2 Table of Contents {no page limit}

1.3 Organizational Conflict of Interest Affirmations and Disclosure {no page limit}

Per the instructions in Section III.A.1 above, if the offeror or any proposed sub IS providing SETA support, as described, to any DARPA technical office(s) through an active contract or subcontract (regardless of which DARPA technical office is being supported), they must provide documentation: 1) stating which office(s) the offeror, sub and/or individual supports, 2) identify the prime contract numbers AND 3) include a description of the action the offeror has taken or proposes to take to avoid, neutralize, or mitigate the conflict.

If the offeror or any proposed sub IS NOT currently providing SETA support as described, then the offeror should simply state “NONE.”

Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award.

1.4 Human Use {no page limit}

For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA. For further information on this subject, see Section VI.B.2 below. If human use is not a factor in a proposal, then the offeror should state “NONE.”

1.5 Animal Use {no page limit}

For submissions containing animal use, proposals must briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.3 below. If animal use is not a factor in a proposal, then the offeror should state “None.”

1.6 Statement of Unique Capability Provided by Government or Government-Funded Team Member {no page limit}

Per section III.A. – Eligible Applicants, proposals which include Government or Government-funded entities (i.e., FFRDC’s, National laboratories, etc.) as prime, sub or team member, shall provide a statement which clearly demonstrates the work being provided by the Government or Government-funded entity team member is not otherwise available from the private sector. If none of the team members belongs to a Government or Government-funded entity, then the offeror should state “Not Applicable.”

1.7 Government or Government-funded Team Member Eligibility {no page limit}

Per section III.A. – Eligible Applicants, proposals which include Government or Government-funded entities (i.e., FFRDC’s, National laboratories, etc.) as prime, sub or team member shall provide documentation citing the specific authority which establishes

they are eligible to propose to Government solicitations: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; AND 4) evidence of agency approval. If no such entities are involved, then the offeror should state “None.”

Proposal Section 2. Technical Details

2.1 PowerPoint Summary Chart {1 page}:

Provide a one slide summary of the proposal that effectively and succinctly conveys in graphical form the main objective, key innovations, expected impact, proposer team, and other unique aspects of the proposal. The summary slide should focus on a visual depiction of the proposed concept. “Penta” and “quad” chart formats should be avoided.

2.2 Innovative Claims for the Proposed Research {4 pages}:

This section is the centerpiece of the proposal and should succinctly describe the unique proposed approach and contributions. This section may also *briefly* address the following topics:

- a. Problem Description. Provide a concise description of the problem areas addressed. Make this specific to your approach.
- b. Research Goals. Identify specific research goals. Goals should address the technical challenges of the effort.
- c. Expected Impact. Describe and justify the expected impact of your research.

2.3 Technical Approach {15 pages}:

Provide a detailed description of the technical approach. This section will serve as the primary expression of the offeror’s scientific and technical ideas. It should also include the offeror’s understanding of the state of the art approaches and the limitations that relate to each topic addressed by the proposal. Describe and analyze state of the art results, approaches, and limitations within the context of the problem area addressed by this research. Demonstrating problem understanding requires not just the enumeration of related efforts; rather, related work must be compared and contrasted to the proposed approach.

2.4 Intellectual Property {No page limit}

Per instructions for proposal section 3.1 below and sections VIII A and B, below, offerors responding to this BAA must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if offerors fail to identify any intellectual property restrictions in their proposals. Include in this section all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. If no restrictions are intended, then the offeror should state “NONE”.

2.5 Management Plan {5 Pages}:

Describe formal teaming agreements that are required to execute this program, a brief synopsis of all key personnel, and a clearly defined organization chart for the program team (prime contractor and subcontractors, if any). Provide an argument that the team size and composition are both necessary and sufficient to meet the program objectives.

Provide detailed task descriptions, costs, and interdependencies for each individual effort and/or subcontractor. To the extent that graduate and postdoctoral students are involved in individual efforts, describe their role and contribution. This section must cover the following:

- a. Programmatic relationship of team members;
- b. Unique capabilities of team members;
- c. Task responsibilities of team members;
- d. Teaming strategy among the team members;
- e. Key personnel along with the amount of effort to be expended by each person during each year; and
- f. Government role in project, if any.

2.6 Personnel, Qualifications, and Commitments {5 pages}:

List key personnel, showing a concise summary of their qualifications. Provide a description of any previous accomplishments or similar efforts completed/ongoing in this or closely related research area, including identification of other Government sponsors, if any.

Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make substantial time commitment to the proposed activity and the proposal will be evaluated accordingly. It is DARPA's intention to put key personnel clauses into the contracts, so offerors should not bid personnel whom they do not intend to employ on the contract.

Include a table of key individual time commitments as follows:

Key Individual	Project	Pending/Current	2010	...	2014
Jane Doe	Program Name	Proposed	X hours	Y hours	Z hours
	Project 1	Current	n/a	n/a	n/a
	Project 2	Pending	100 hours	n/a	n/a
John Deer	Program Name	Proposed			

2.7 Schedule and Milestones {8 pages}:

This section should include:

- a. {2 pages} Cost, schedule and measurable milestones for the proposed research, including estimates of cost for each task in each year of the effort delineated by the prime and major subcontractors, total cost and company cost share, if applicable. (Note: Measurable milestones should capture key development points in tasks and should be clearly articulated and defined in time relative to start of effort.)
- b. {2 pages} Schedule Graphic. Provide a graphic representation of project schedule including detail down to the individual effort level. This should include but not be limited to a coherent development plan, which demonstrates a clear understanding of the proposed research; and a plan for periodic and increasingly robust tests

over the project life that will show applicability to the overall program concept. Show all project milestones. Use “x months after contract award” designations for all dates.

- c. {2 pages} Detailed Task Descriptions. Provide detailed task descriptions for each discrete work effort and/or subcontractor in schedule graphic.
- d. {2 pages} Cost Summary. Provide a top level total cost summary for the entire program. Show each major task and subtask by month and delineate prime and major subcontractor efforts.

2.8 Statement of Work (SOW) {no page limit}:

In plain English, clearly define the technical tasks/subtasks to be performed, their durations, and dependencies among them. For each task/subtask, provide:

- A general description of the objective (for each defined task/activity);
- A detailed description of the approach to be taken to accomplish each defined task/activity);
- Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);
- The completion criteria for each task/activity—a product, event or milestone that defines its completion;
- Define all deliverables (reports, data, software, hardware, prototypes, etc.) to be provided to the Government in support of the proposed research tasks/activities. Include expected delivery date for each deliverable.

Do not include any proprietary information in the SOW or include any markings placing limitations on distribution on the pages containing the SOW.

Proposal Section 3. Cost

3.1 Detailed Cost Breakdown {no page limit}

Provide: (1) total program cost broken down by major cost items (direct labor, including labor categories; subcontracts; materials; other direct costs, overhead charges, etc.) and further broken down by task and phase; (2) major program tasks by fiscal year; (3) an itemization of major subcontracts and equipment purchases; (4) an itemization of any information technology (IT) purchase⁶; (5) a summary of projected funding requirements

⁶ IT is defined as “any equipment, or interconnected system(s) or subsystem(s) of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the agency. (a) For purposes of this definition, equipment is used by an agency if the equipment is used by the agency directly or is used by a contractor under a contract with the agency which – (1) Requires the use of such equipment; or (2) Requires the use, to a significant extent, or such equipment in the performance of a service or the furnishing of a product. (b) The term “information technology” includes computers, ancillary, software, firmware and similar procedures, services (including support services), and related resources. (c) The term “information technology” does not include – (1) Any equipment that is acquired by a contractor incidental to a contract; or (2) Any equipment that contains imbedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is

by month; and (6) the source, nature, and amount of any industry cost-sharing; (7) identification of pricing assumptions of which may require incorporation into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Expert/s, etc.) and (8) provide appropriate cost or price analyses of subcontractor proposals, IAW FAR 15.404-3, to establish the reasonableness of proposed subcontract prices.

The prime contractor is responsible for compiling and providing all subcontractor proposals for the Procuring Contracting Officer (PCO). Subcontractor proposals should include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each. NOTE: for IT and equipment purchases, include a letter stating why the offeror cannot provide the requested resources from its own funding.

Any negotiations and/or awards will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA. Provide supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates above. Include a description of the method used to estimate costs and supporting documentation. Note: “cost or pricing data” as defined in FAR Subpart 15.4 shall be required if the offeror is seeking a procurement contract award of \$650,000 or greater unless the offeror requests an exception from the requirement to submit cost or pricing data. “Cost or pricing data” are not required if the offeror proposes an award instrument other than a procurement contract (e.g., an other transaction). All proprietary subcontractor proposal documentation, prepared at the same level of detail as that required of the prime, shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the offeror or by the subcontractor organization.

For prototype system development proposals, the Government may award either a Federal Acquisition Regulation (FAR) based contract or an Other Transaction Authority for Prototypes (OTA) agreement. Offerors interested in receiving an OTA are asked to submit proposal responses that accommodate both options. For information on 845 Other Transaction Authority for Prototypes (OTA) agreements, refer to http://www.darpa.mil/cmo/other_trans.html. The Government will evaluate all Offerors’ FAR based proposals in accordance with the established evaluation criteria. After award selection based on the FAR based proposals, the Government will evaluate the selected awardees Other Transaction proposal with the intent of selecting the program approach offering the most benefit to the Government. The intent of this evaluation approach is to prevent contractors with greater financial flexibility from reducing the proposed cost to the Government by providing a large cost share or extra effort beyond that of a contractor with less financial capability. In this approach all proposals are evaluated based upon their technical merits and ability to realistically price their proposed technical scope.

integral to its operation, is not information technology.”

All proposers requesting an 845 Other Transaction Authority for Prototypes (OTA) agreement must include a detailed list of milestones. Each such milestone must include the following: milestone description, completion criteria, due date, payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). It is noted that, at a minimum, such milestones should relate directly to accomplishment of program technical metrics as defined in the BAA and/or the offeror's proposal. Agreement type, fixed price or expenditure based, will be subject to negotiation by the Agreements Officer; however, it is noted that the Government prefers use of fixed price milestones with a payment/funding schedule to the maximum extent possible. Do not include proprietary data. If the proposer requests award of an 845 OTA agreement as a nontraditional defense contractor, as so defined in the OSD guide entitled "Other Transactions (OT) Guide For Prototype Projects" dated January 2001 (as amended) (<http://www.acq.osd.mil/dpap/Docs/otguide.doc>), information must be included in the cost proposal to support the claim. Additionally, if the offeror requests award of an 845 OTA agreement, without the required one-third (1/3) cost share, information must be included in the cost proposal supporting that there is at least one non-traditional defense contractor participating to a significant extent in the proposed prototype project.

4. Submission Date and Time

The full proposal must be submitted per the instructions in Section IV.B.2 above by 2:00pm Eastern Time on December 17, 2010 in order to be considered during the initial evaluation phase.

Proposals may be submitted at any time from issuance of this announcement through 2:00pm Eastern Time on April 18, 2011; however, proposers are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial closing date deadline.

DARPA will post a consolidated Question and Answer response on or after November 1, 2010, before final full proposals are due. In order to receive a response to your question, submit your question by October 27, 2010 to DARPA-BAA-11-20@darpa.mil.

DARPA will acknowledge receipt of complete submissions via e-mail and assign control numbers that should be used in all further correspondence regarding proposals.

Failure to comply with the submission procedures may result in the submission not being evaluated.

5. Intergovernmental Review

Not applicable.

6. Funding Restrictions

Not applicable.

V. APPLICATION REVIEW INFORMATION

A. Evaluation Criteria

Evaluation of proposals will be accomplished through a scientific/technical review of each proposal using the following mandatory criteria: (a) Overall Scientific and Technical Merit; (b) Potential Contribution and Relevance to the DARPA Mission; (c) Intellectual Property; and (d) Cost Realism. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

The following are descriptions of the evaluation criteria which are listed in descending order of relative importance:

(a) Overall Scientific and Technical Merit

The proposed technical approach is innovative, feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. The expertise and experience of the offeror's proposed technical team will be evaluated based upon the qualifications of the key personnel proposed for the effort and their previous accomplishments on similar efforts.

(b) Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort with relevance to the national technology base will be evaluated. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application.

(c) Intellectual Property

The extent to which intellectual property (IP) rights limitations placed on the proposer's technology and deliverables create a barrier to technology transition to the research, industrial, and operational military communities.

(d) Cost Realism

The objective of this criterion is to establish that the proposed costs are realistic for the technical and management approach offered, as well as to determine the proposer's practical understanding of the effort. The proposal will be reviewed to determine if the costs proposed are based on realistic assumptions, reflect a sufficient understanding of the technical goals and objectives of the BAA, and are consistent with the proposer's technical approach (to include the proposed Statement of Work). At a minimum, this will involve review, at the prime and subcontract level, of the type and number of labor hours proposed per task as well as the types and kinds of materials, equipment and fabrication costs proposed. It is expected that the effort will leverage all available relevant prior

research in order to obtain the maximum benefit from the available funding. For efforts with a likelihood of commercial application, appropriate direct cost sharing may be a positive factor in the evaluation. The evaluation criterion recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies.

B. Review and Selection Process

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. For evaluation purposes, a proposal is the document described in "Proposal Information," Section IV.B. Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Restrictive notices notwithstanding, proposals may be handled for administrative purposes by support contractors. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements.

Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants /experts who are strictly bound by the appropriate non-disclosure requirements.

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. After proposals have been evaluated and selections made, the original of each proposal received will be retained at DARPA and all other copies will be destroyed.

VI. AWARD ADMINISTRATION INFORMATION

A. Award Notices

As soon as the evaluation of a proposal is complete, the proposer will be notified that 1) the proposal has been selected for funding pending contract negotiations, or 2) the proposal has not been selected. These official notifications will be sent via United States Postal Service OR e-mail to the Technical POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Meeting and Travel Requirements

There will be a program kickoff meeting and all key participants are required to attend. Performers should also anticipate at least bi-monthly PI meetings and periodic site visits at the Program Manager's discretion. The PI meetings will be held at Government-furnished facilities in major U.S. or international metropolitan areas with easy access by air. Performers should plan for short bi-weekly status updates to be conducted via videoteleconference (VTC) or traditional teleconference if appropriate facilities are unavailable.

2. Human Use

All research involving human subjects, to include use of human biological specimens and human data, selected for funding must comply with the federal regulations for human subject protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, *Protection of Human Subjects* (http://www.access.gpo.gov/nara/cfr/waisidx_07/32cfr219_07.html) and DoD Directive 3216.02, *Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research* (<http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf>).

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance (<http://www.hhs.gov/ohrp>). All institutions engaged in human subject research, to include subcontractors, must also have a valid Assurance. In addition, personnel involved in human subjects research must provide documentation of completing appropriate training for the protection of human subjects.

For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA. The IRB conducting the review must be the IRB identified on the institution's Assurance. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. Consult the designated IRB for guidance on writing the

protocol. The informed consent document must comply with federal regulations (32 CFR 219.116). A valid Assurance along with evidence of appropriate training all investigators should all accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects regulatory review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Note that confirmation of a current Assurance and appropriate human subjects protection training is required before headquarters-level approval can be issued.

The amount of time required to complete the IRB review/approval process may vary depending on the complexity of the research and/or the level of risk to study participants. Ample time should be allotted to complete the approval process. The IRB approval process can last between one to three months, followed by a DoD review that could last between three to six months. No DoD/DARPA funding can be used towards human subjects research until ALL approvals are granted.

3. Animal Use

Any Recipient performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Act of 1966, as amended, (7 U.S.C. 2131-2159); (ii) the guidelines described in National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; (iii) DoD Directive 3216.01, "Use of Laboratory Animals in DoD Program."

For submissions containing animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the PHS Policy on Humane Care and Use of Laboratory Animals, available at <http://grants.nih.gov/grants/olaw/olaw.htm>.

All Recipients must receive approval by a DoD certified veterinarian, in addition to an IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the USAMRMC Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the Recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc-www.army.mil/index.cfm?pageid=Research_Protections.acuro&rn=1.

4. Publication Approval

It is the policy of the Department of Defense that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. The definition of Contracted Fundamental Research is:

“Contracted Fundamental Research includes [research performed under] grants and contracts that are (a) funded by budget category 6.1 (Basic Research), whether performed by universities or industry or (b) funded by budget category 6.2 (Applied Research) and performed on-campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.” Such research is referred to by DARPA as “Restricted Research.”

Pursuant to DoD policy, research performed under grants and contracts that are (a) funded by budget category 6.2 (Applied Research) and NOT performed on-campus at a university or (b) funded by budget category 6.3 (Advanced Technology Development) does not meet the definition of fundamental research. Publication restrictions will be placed on all such research.

It is anticipated that awards for both Fundamental and Non-Fundamental Research may be made as a result of this BAA depending on the nature of the performer and place of performance. Appropriate clauses will be included in resultant awards for Non-Fundamental Research to prescribe publication requirements and other restrictions, as appropriate. DARPA does not anticipate applying publication restrictions of any kind to Fundamental Research to each individual award that may result from this BAA.

Proposers are advised if they propose cooperative agreements, DARPA may elect to award other award instruments due to the need to apply publication or other restrictions. DARPA will make this election if it determines that the research resulting from the proposed program will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program and will be considered Restricted Research.

For certain research projects, it may be possible that although the research being performed by the Prime Contractor is Restricted Research, a subcontractor may be conducting Contracted Fundamental Research. In those cases, it is the Prime Contractor’s responsibility to explain in their proposal why its subcontractor’s effort is Contracted Fundamental Research.

The following same or similar provision will be incorporated into any resultant Restricted Research or Non-Fundamental Research procurement contract or other transaction:

There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior

written approval of DARPA's Public Release Center (DARPA/PRC). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. With regard to subcontractor proposals for Contracted Fundamental Research, papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

When submitting material for written approval for open publication, the Contractor/Awardee must submit a request for public release to the PRC and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to prc@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to <http://www.darpa.mil/prc> for information about DARPA's public release process.

5. Export Control

The following clause will be included in all procurement contracts, and may be included in Other Transactions as deemed appropriate:

(a) *Definition.* "Export-controlled items," as used in this clause, means items subject to the Export Administration Regulations (EAR) (15 CFR Parts 730-774) or the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130). The term includes:

- 1) "Defense items," defined in the Arms Export Control Act, 22 U.S.C. 2778(j)(4)(A), as defense articles, defense services, and related technical data, and further defined in the ITAR, 22 CFR Part 120.
- 2) "Items," defined in the EAR as "commodities," "software," and "technology," terms that are also defined in the EAR, 15 CFR 772.1.

(b) The Contractor shall comply with all applicable laws and regulations regarding export-controlled items, including, but not limited to, the requirement for contractors to register with the Department of State in accordance with the ITAR. The Contractor shall consult with the Department of State regarding any questions relating to compliance with

the ITAR and shall consult with the Department of Commerce regarding any questions relating to compliance with the EAR.

(c) The Contractor's responsibility to comply with all applicable laws and regulations regarding export-controlled items exists independent of, and is not established or limited by, the information provided by this clause.

(d) Nothing in the terms of this contract adds, changes, supersedes, or waives any of the requirements of applicable Federal laws, Executive orders, and regulations, including but not limited to—

(1) The Export Administration Act of 1979, as amended (50 U.S.C. App. 2401, *et seq.*);

(2) The Arms Export Control Act (22 U.S.C. 2751, *et seq.*);

(3) The International Emergency Economic Powers Act (50 U.S.C. 1701, *et seq.*);

(4) The Export Administration Regulations (15 CFR Parts 730-774);

(5) The International Traffic in Arms Regulations (22 CFR Parts 120-130); and

(6) Executive Order 13222, as extended;

(e) The Contractor shall include the substance of this clause, including this paragraph (e), in all subcontracts.

6. Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

7. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d) and FAR Subpart 39.2. Each proposer who submits a proposal involving the creation or inclusion of electronic and information technology must ensure that Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities and

members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

8. Employment Eligibility Verification

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal Contractors in E-verify and use E-Verify to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in Other Transactions.

9. Central Contractor Registration (CCR) and Universal Identifier Requirements

Unless the proposer is exempt from this requirement, as per FAR 4.1403-a or DoDGARs Part 25.110, as applicable, all proposers must be registered in the Central Contractor Registration (CCR) and have a valid Data Universal Numbering System (DUNS) number prior to submitting a proposal. Information on CCR registration is available at <http://www.ccr.gov>. All proposers must maintain an active CCR registration with current information at all times during which they have an active Federal award or proposal under consideration by DARPA. All proposers must provide the DUNS number in each proposal they submit.

DARPA cannot make an assistance award to a proposer until the proposer has provided a valid DUNS number and has maintained an active CCR registration with current information.

10. Reporting Executive Compensation and First-Tier Subcontract Awards

The following clause will be used in all procurement contracts regarding the reporting of executive compensation and first-tier subawards. A similar award term will be used in all grants and cooperative agreements.

Reporting Executive Compensation and First-Tier Subcontract Awards (Jul 2010)

(a) *Definitions.* As used in this clause:

"Executive" means officers, managing partners, or any other employees in management positions.

"First-tier subcontract" means a subcontract awarded directly by a Contractor to furnish supplies or services (including construction) for performance of a prime contract, but

excludes supplier agreements with vendors, such as long-term arrangements for materials or supplies that would normally be applied to a Contractor's general and administrative expenses or indirect cost.

"Total compensation" means the cash and noncash dollar value earned by the executive during the Contractor's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):

(1) Salary and bonus.

(2) Awards of stock, stock options, and stock appreciation rights. Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.

(3) Earnings for services under non-equity incentive plans. This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.

(4) Change in pension value. This is the change in present value of defined benefit and actuarial pension plans.

(5) Above-market earnings on deferred compensation which is not tax-qualified.

(6) Other compensation, if the aggregate value of all such other compensation (*e.g.*, severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

(b) Section 2(d) of the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282), as amended by section 6202 of the Government Funding Transparency Act of 2008 (Pub. L. 110-252), requires the Contractor to report information on subcontract awards. The law requires all reported information be made public, therefore, the Contractor is responsible for notifying its subcontractors that the required information will be made public.

(c)(1) Unless otherwise directed by the contracting officer, by the end of the month following the month of award of a first-tier subcontract with a value of \$25,000 or more, (and any modifications to these subcontracts that change previously reported data), the Contractor shall report the following information at <http://www.fsrs.gov> for each first-tier subcontract. (The Contractor shall follow the instructions at <http://www.fsrs.gov> to report the data.)

(i) Unique identifier (DUNS Number) for the subcontractor receiving the award and for the subcontractor's parent company, if the subcontractor has a parent company.

(ii) Name of the subcontractor.

(iii) Amount of the subcontract award.

(iv) Date of the subcontract award.

(v) A description of the products or services (including construction) being provided under the subcontract, including the overall purpose and expected outcomes or results of the subcontract.

(vi) Subcontract number (the subcontract number assigned by the Contractor).

(vii) Subcontractor's physical address including street address, city, state, and country. Also include the nine-digit zip code and congressional district.

(viii) Subcontractor's primary performance location including street address, city, state, and country. Also include the nine-digit zip code and congressional district.

(ix) The prime contract number, and order number if applicable.

(x) Awarding agency name and code.

(xi) Funding agency name and code.

(xii) Government contracting office code.

(xiii) Treasury account symbol (TAS) as reported in FPDS.

(xiv) The applicable North American Industry Classification System code (NAICS).

(2) By the end of the month following the month of a contract award, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for the Contractor's preceding completed fiscal year at <http://www.ccr.gov> , if—

(i) In the Contractor's preceding fiscal year, the Contractor received—

(A) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(B) \$25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(ii) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/excomp.htm> .)

(3) Unless otherwise directed by the contracting officer, by the end of the month following the month of a first-tier subcontract with a value of \$25,000 or more, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for each first-tier subcontractor for the subcontractor's preceding completed fiscal year at <http://www.fsrs.gov> , if—

(i) In the subcontractor's preceding fiscal year, the subcontractor received—

(A) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(B) \$25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(ii) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange

Commission total compensation filings at
<http://www.sec.gov/answers/execomp.htm> .)

(d)(1) If the Contractor in the previous tax year had gross income, from all sources, under \$300,000, the Contractor is exempt from the requirement to report subcontractor awards.

(2) If a subcontractor in the previous tax year had gross income from all sources under \$300,000, the Contractor does not need to report awards to that subcontractor.

(e) Phase-in of reporting of subcontracts of \$25,000 or more.

(1) Until September 30, 2010, any newly awarded subcontract must be reported if the prime contract award amount was \$20,000,000 or more.

(2) From October 1, 2010, until February 28, 2011, any newly awarded subcontract must be reported if the prime contract award amount was \$550,000 or more.

(3) Starting March 1, 2011, any newly awarded subcontract must be reported if the prime contract award amount was \$25,000 or more.

C. Reporting

The number and types of reports will be specified in the award document, but will include as a minimum monthly financial and technical status reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle. At least one copy of each report will be delivered to DARPA and not merely placed on an internet site.

D. Electronic Systems

1. Representations and Certifications

In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at <http://orca.bpn.gov>.

2. Wide Area Work Flow (WAWF)

Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWF at <http://wawf.eb.mil>. Registration to WAWF will be required prior to any award under this BAA.

3. i-Edison

All required invention and patent reporting shall be accomplished, as applicable, using the i-Edison.gov reporting website at <http://s-edison.info.nih.gov/iEdison>.

VII. AGENCY CONTACTS

The preferred method of communication in regard to this BAA is e-mail. Administrative, technical, or contractual questions should be sent via e-mail to DARPA-BAA-11-20@darpa.mil. If e-mail is not available, fax questions to (703) 248-1861, Attn: BAA 11-20. All requests must include the name, email address, and phone number of a point of contact.

Postal correspondence should be addressed to:

DARPA/TTO
Attn: BAA 11-20
3701 North Fairfax Drive
Arlington, VA 22203-1714

The websites for this solicitation where this BAA and related information may be retrieved are:

<http://www.darpa.mil/tto/solicitations/index.html>
<https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-11-20/listing.html>

VIII. OTHER INFORMATION

A. . Intellectual Property

1. Procurement Contract Proposers

a. Noncommercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under

DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit the list, the Government will assume that it automatically has “unlimited rights” to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire “unlimited rights” unless the parties agree otherwise. Proposers are admonished that the Government will use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.” It is noted an assertion of “NONE” indicates that the Government has “unlimited rights” to all noncommercial technical data and noncommercial computer software delivered under the award instrument, in accordance with the DFARS provisions cited above. Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

NONCOMMERCIAL

Technical Data Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(NARRATIVE)	(LIST)	(LIST)	(LIST)

b. Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all commercial technical data and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government’s use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit the list, the Government will assume that there are no restrictions on the Government’s use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate

the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

B. Non-Procurement Contract Proposers – Noncommercial and Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting an Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 1.a and 1.b above. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

C. All Proposers – Patents

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

1. All Proposers – Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, proposers shall provide a short summary for each item

asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.